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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/696,140	10/29/2003	Ramin Samadani	200312926-1	5510

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FORT COLLINS, CO 80527-2400

EXAMINER
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KRASNIC, BERNARD

ART UNIT	PAPER NUMBER
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2624

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/06/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No. 10/696,140	Applicant(s) SAMADANI, RAMIN	
	Examiner Bernard Krasnic	Art Unit 2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 08 January 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12 is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |                                                                                                            |                                                                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

## **DETAILED ACTION**

### ***Response to Arguments***

1. The amendment filed 1/08/2007 have been entered and made of record.
2. The Terminal Disclaimer filed 1/08/2007 have been approved, entered and made of record. Therefore, the Examiner has withdrawn the rejections made under the doctrine of Obvious-Type Double Patenting.
3. In response to the amendments filed on 1/08/2007:  
  
The "Objections to the specification" have been entered and therefore the Examiner withdraws the objections to the specification.  
  
The "Objections to the claims" have been entered, but the Applicant has not amended a few of the addressed claim objections and therefore the Examiner has once again addressed these issues.  
  
The "Claim rejections under 35 U.S.C. 112, second paragraph" have been entered and therefore the Examiner withdraws the rejections under 35 U.S.C. 112; second paragraph. However, due to the amendment, claim 8 arises with a 35 U.S.C. 112 second paragraph issue.
4. The Applicant's arguments with respect to independent claims 1 and 28-30 have been considered but are moot in view of the new ground(s) of rejection. The Nosratinia in view of Hallapuro and Winger references, previously used to reject independent

claims 1 and 28-30 require a fourth reference Malvar ("Low-complexity transform and quantization in H.264/AVC", this reference was disclosed and used as part of the rejections in the Examiners original Non-Final Office Action) because the applicant has included the further limitation "non-linear" to the independent claims 1 and 28-30 (see Applicants Reply - page 4, line 5 of claim 1, page 8, line 5 of claim 28, line 5 of claim 29, page 9, line 6 of claim 30). Obviously Nosratinia in view of Hallapuro and Winger does not disclose that F specifies "non-linear" mapping from coefficients of D to coefficients of Z, therefore Nosratinia in view of Hallapuro and Winger and further in view of Malvar is used to refute the amended independent claims 1 and 28-30.

5. Applicant's arguments filed 1/08/2007 have been fully considered but they are not persuasive.

The Applicant alleges, "Nosratinia does not teach or suggest anything ..." in page 12, and states respectively that the amended limitation "nonlinear" mapping is not taught by Nosratinia. The Examiner agrees, however in reply to this amendment to claim 1, the Examiner has used Malvar to reject this further limitation as discussed above and in the 35 U.S.C. 103 rejections.

The Applicant alleges, "Hallapuro only discloses that his approximations ..." and "Thus, neither Nosratinia or Hallapuro provides ..." in pages 12-13, and states respectively that Hallapuro's approximations of the DCT are related to non-compression and also states that the motivation to use Hallapuro is not substantial. However, Hallapuro discloses the motivation that "a good resulting quality can be achieved" using

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the transform while "requiring less operations" (see Hallapuro, abstract, lines 3-6 and 14-18). Hallapuro also discloses "decompression of compressed digital data" (see Hallapuro, abstract, lines 14-18) and compression is closely related to decompression (they are opposites if a compression and decompression system is to properly function) which would lead one of ordinary skill in the art at the time the invention was made to use Hallapuro to teach the suggested limitations.

The Applicant alleges, "In addition, the Examiner also has not met the second ..." in page 13, and states respectively that there is no reasonable expectation of success. In response to Applicant's argument that there is no reasonable expectation of success, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

The Applicant alleges, "Contrary to the Examiner's statement ..." in page 14, and states respectively that Winger's block is not a respective quantization value linked to the input image. However, Winger does disclose the block is a respective quantization linked to the input image (see Winger, page 3, paragraph [0033], lines 1-7). The Applicant alleges throughout page 15 and states respectively that there is no sufficient motivation to use Winger's block thresholding process instead of the standard JPEG quantizer where the process is used to "reduce coding artifacts and enhance visual quality". However, Winger discloses "estimation accuracy" in addition to the "improving

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the rate-distortions" (see Winger, paragraph [0007], paragraph [0009], lines 28-31, paragraph [0017], lines 7-9). The Applicant once again alleges, "Furthermore, the Examiner also has not met the second ..." in page 16, and states respectively that there is no reasonable expectation of success. The Examiner has addressed this similar issue above in a different argument.

The Applicant alleges, "Each of claims 2-5, 8, 13, 15, 16, and 18-21 ..." in page 16, and states respectively that these rejections should be withdrawn due to the applicants arguments and amendment of "nonlinear" mapping toward claim 1. However, as discussed above and in the 35 U.S.C. 103 rejections, claim 1 even after the amendment is still not patentable over the prior art and therefore the rejections on claims 2-5, 8, 13, 15, 16, and 18-21 still remain.

The Applicant alleges, "Claim 8 recites that ..." in pages 16-17, and states respectively that Nosratinia doesn't teach the amended "nonlinear" mapping for claim 1 and requests that the Examiner cite prior art for the assertions regarding the motivation for the obvious statement introduced. However, the Examiner feels there is no need to fulfill the request to cite a prior art reference in light of the amended claim 1, because claim 8 now consists of a 35 U.S.C. 112, second paragraph issue as will be discussed in the 35 U.S.C. 112 rejections section of this Office Action,

The Applicant alleges, "Claim 20 recites that ..." in pages 17-18, and states respectively that the Examiner impermissibly has relied on a single element of Nosratinia's disclosure to meet two separate elements. However, as can be seen in Fig. 5 of Nosratinia as disclosed in the original Examiner's Non-Final Office Action, a



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spatially forward transform is applied to Nosratinia's "Noisy Image" followed by Nosratinia's quantizer and finally the combination of inverse transformed images create the output image or Nosratinia's "Enhanced image" which is what claim 20 is reciting respectively (see Nosratinia, Fig. 5, pages 71-73, section 3.1). Therefore, as the applicant alleges, "Claim 21 depends from claim 20 ..." in page 18, the rejection does still remain for claim 21 over the prior art since claim 20 is still deemed not patentable over the prior art. Similarly, as the applicant alleges, "Each of independent claims 28-30 ..." in page 18, the arguments are moot in view of the new grounds of rejection as discussed above and in the 35 U.S.C. 103 rejections.

The Applicant alleges, "The Examiner has rejected claims 6, 7, and 9-11 ..." in pages 18-20, and states respectively that the rejections to claims 6, 7, and 9-11 should be withdrawn because claim 1 does not provide for "nonlinear" mapping. However, the arguments for the amended "nonlinear" mapping toward claim 1 are moot in view of the new grounds of rejection as discussed above and in the 35 U.S.C 103 rejections. The Applicant also states respectively that Malvar does not provide proper motivation to substitute Nosratinia's DCT with Malvar's applied teachings of "rounding the scaled entries of the DCT" (see Malvar, page 599, sentence above equation 3) to show the process is used to "reduce coding artifacts and enhance visual quality". However, Malvar discloses improving compression efficiency and improving the PSNR while minimizing the computational complexity (see Malvar, page 599, left col., "For improved compression ...", page 602, left col., "In some applications ...", abstract). The Applicant also states respectively that there is no reasonable expectation of success for Malvar's

teachings. The Examiner has addressed this similar issue above in a different argument. In addition, the amendment to claim 9 still contains the features taught by Malvar (see Malvar, page 599, equation 3).

The Applicant alleges, "The Examiner has rejected claim 14 ..." in pages 20-21, and states respectively that the rejection to claim 14 should be withdrawn because claim 1 does not provide for "nonlinear" mapping. However, the arguments for the amended "nonlinear" mapping toward claim 1 are moot in view of the new grounds of rejection as discussed above and in the 35 U.S.C. 103 rejections. The Applicant also states respectively that Merhav does not provide proper motivation to substitute Nosratinia's DCT with Merhav's applied teachings of an approximate DCT based on a factorization to show the process is used to "reduce coding artifacts and enhance visual quality". However, Merhav discloses maintaining the images visual integrity and quality while increasing the low cost computational processing speed (see Merhav, col. 7, lines 30-35). The Applicant also states respectively that there is no reasonable expectation of success for Merhav's teachings. The Examiner has addressed this similar issue above in a different argument.

### ***Claim Objections***

6. Claims 18-20 and 31 are objected to because of the following informalities: Claims 18-20, line 2 respectively: "inverse transform" should be -- the intermediate images -- as described on page 13, lines 8-11 of the specification.



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Claim 31 [newly added], lines 1-2: "the rounding operator" should be -- a rounding operator --.

Claim 31 [newly added], line 2: "the coefficient" should be -- a coefficient --.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 8 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re Claim 8: Due to the amended limitation of "nonlinear" mapping to claim 1, this claim is rendered indefinite because it is unclear how F specifies a non-linear mapping from coefficients of D to coefficients of Z (as recited in claim 1) and also F specifies a linear mapping of coefficients of D to coefficients of Z having values 0 and  $\pm 2^N$  (linear mapping) in the same claim. Having F specifying a non-linear mapping in claim 1 and then having F specifying a linear mapping in dependent claim 8 is contradictory.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1 and 28-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nosratinia in view of Hallapuro, Winger, and Malvar. The teachings of Nosratinia as modified by Hallapuro and Winger have been discussed in the rejections of the Examiners original Non-Final Office Action.

However, Nosratinia as modified by Hallapuro and Winger fails to disclose or fairly suggest, as recited in claims 1 and 28-30, that F specifies a nonlinear mapping from coefficients of D to coefficients of Z.

Malvar discloses F / round specifies a nonlinear mapping / round from coefficients of D / DCT to coefficients of Z / H (see Malvar, page 599, equation 3).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to further modify Nosratinia's method and system, as modified by Hallapuro and Winger, using Malvar's teachings by including the nonlinear mapping to Nosratinia's mapping in order to improve compression efficiency and improve the PSNR while minimizing the computational complexity (see Malvar, page 599, left col., "For improved compression ...", page 602, left col., "In some applications ...", abstract).

Re [newly added] Claim 31: Malvar further discloses  $Z_{ij} = \text{round} \{ (3.5) D_{ij} \} /$

$H = \text{round}\{aH_{DCT}\}$  is the rounding operator,  $Z_{ij}$  is the coefficient of Z in row i and column j, and  $D_{ij}$  is the coefficient of a discrete cosine transform in row i and column j (see

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Malvar, page 599, equation 3,  $D_{ij}$  is HDCT and  $H$  is  $Z_{ij}$ , the constant  $a$  of equation 3 may be 25 or 3.5 or any other type of constant).

***Allowable Subject Matter***

11. Claim 12 is allowed.

***Conclusion***

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bernard Krasnic whose telephone number is (571) 270-

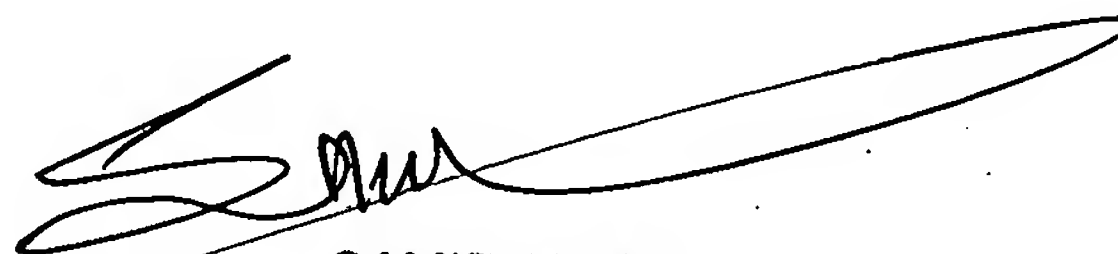
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1357. The examiner can normally be reached on Mon-Thur 9:00am-3:00pm and every other Friday 9:00am-3:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jingge Wu can be reached on (571) 272-7429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Bernard Krasnic  
February 28, 2007



**SAMIR AHMED**  
**PRIMARY EXAMINER**